



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,793	05/03/2005	Akira Ohba	046124-5322	3905
55694 7590 09/21/2007 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209			EXAMINER HO, ALLEN C	
			ART UNIT 2882	PAPER NUMBER
			MAIL DATE 09/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/508,793

Applicant(s)

OHBA ET AL.

Examiner

Allen C. Ho

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the illumination optical system adjusting means claimed in claim 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

2. Claim 1 is objected to because of the following informalities:

- (1) Claim 1 recites the limitation "the x-ray image" in line 7. There is insufficient antecedent basis for this limitation in the claim.
- (2) Claim 1 recites the limitation "the optical axis direction" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai *et al.* (U. S. Patent No. 5,434,901) in view of Chase and Silk (Applied Optics 14, 1975).

With regard to claim 1, Nagai *et al.* disclosed an x-ray image magnifying device comprising: an illumination optical system (81) for irradiating the x-rays emitted from an x-ray source to a sample; an objective lens (83) configured by a grazing incident mirror (a Wolter optical system) composed of a rotary hyperboloidal surface and a rotary ellipsoidal surface (column 9, line 58 - column 10, line 5) for magnifying and focusing the x-ray having penetrated through the sample onto a predetermined position (column 13, line 66 - column 14, line 2); and an x-ray image detecting means (85) for detecting the x-ray image focused by the objective lens.

However, Nagai *et al.* failed to disclose a magnification adjusting means for adjusting the magnification of the x-ray image by moving the x-ray image detecting means along the optical axis direction, and a moving stage for moving the sample along the optical axis direction to adjust a distance between the sample and the objective lens.

Chase and Silk disclosed that the magnification of a Wolter mirror is determined by the ratio of its image distance and object distance (p. 2097, column 1, last paragraph).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a magnification adjusting means for moving the x-ray image detecting means and a moving stage for moving the sample along the optical axis direction, since a person would be motivated to select a magnification appropriate for viewing a sample.

With regard to claim 2, Nagai *et al.* and Chase and Silk disclosed the x-ray image magnifying device according to claim 1, further comprising: a light irradiation means (Nagai *et al.* 31) for irradiating the sample with a visible light or an ultraviolet light; and a light detecting means (Nagai *et al.* 35) for detecting an image by a light which has penetrated through the sample had has been reflected by the objective lens.

With regard to claim 5, Nagai *et al.* and Chase and Silk disclosed the x-ray image magnifying device according to claim 1, wherein the x-ray image detecting means is moved so as to satisfy the following numerical express:  $b=aM$  (this expression is automatically satisfied by a Wolter optic).

With regard to claim 6, Nagai *et al.* and Chase and Silk disclosed the x-ray image magnification device according to claim 1. However, Nagai *et al.* and Chase and Silk failed to

Art Unit: 2882

disclose an illumination optical system adjusting means for optimizing the x-ray emitted from the x-ray source by moving the illumination optical system along the optical axis direction.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an illumination optical system adjusting means, since a person would be motivated to position the sample at the focal point of the illumination optical system.

***Allowable Subject Matter***

5. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Amendment***

6. Applicants' amendment filed 18 July 2007 with respect to the drawings have been fully considered. The objection of the drawings has been withdrawn.

***Response to Arguments***

7. Applicants' arguments with respect to claims 1, 2, 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Art Unit: 2882

- (1) Nagai *et al.* (U. S. Patent No. 5,432,831) disclosed a vacuum optical system.
- (2) Nakayama (JP6347600) disclosed an x-ray microscope.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197, (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen C. Ho/  
Primary Examiner  
Art Unit 2882

14 September 2007